

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims:**

Claim 1 (Currently Amended): A method performed by a network node coupled to a passive optical network interface and to one or more network clients, the method comprising:  
detecting a disablement of the a passive optical network interface;  
storing in a memory address association information indicating association of network addresses with the network clients upon detecting the disablement;  
retrieving from the memory the stored address association information upon recovery of the passive optical network interface from the disablement; and  
reestablishing the association of associating the network addresses and the network clients based on the retrieved stored address association information upon recovery from the disablement.

Claim 2 (Currently Amended): The method of claim 1, wherein reestablishing the association of associating the network addresses and the network clients includes:  
retrieving the stored address association information; and  
verifying whether the associations indicated by the address association information are valid.

Claim 3 (Original): The method of claim 2, wherein verifying whether the associations are valid includes:  
sending Address Resolution Protocol (ARP) queries for the network addresses indicated by the address association information; and  
maintaining the address associations upon receiving ARP responses.

**Claim 4 (Original):** The method of claim 3, wherein the address association information includes a remaining lease time, the method further comprising sending the ARP queries periodically for the remaining lease time for each of the address associations.

**Claim 5 (Original):** The method of claim 4, further comprising ceasing the sending of the ARP queries for one of the network addresses upon detecting a change in the address association information for the respective network address.

**Claim 6 (Original):** The method of claim 3, further comprising canceling the address association for one of the network addresses when an ARP response is not received for the respective network address within a predetermined period of time.

**Claim 7 (Original):** The method of claim 3, further comprising sending the ARP query to a network client associated with the network address.

**Claim 8 (Original):** The method of claim 2, further comprising modifying the address association information upon detecting a lease of one of the network addresses.

**Claim 9 (Original):** The method of claim 2, further comprising modifying the address association information upon detecting a renewal of one of the network addresses.

**Claim 10 (Original):** The method of claim 2, further comprising canceling one of the address associations upon detecting that one of the clients has released the respective network address.

**Claim 11 (Original):** The method of claim 1, further comprising:  
tracking a length of time of the network disablement; and  
updating remaining lease times of address association information in accordance with the length of time of the network disablement.

Claim 12 (Original): The method of claim 11, wherein tracking the length of time of the network disablement includes:

setting a timestamp upon detecting the network disablement; and  
comparing the timestamp with a time indicated by a timing device to determine the length of time of the network disablement.

Claim 13 (Original): The method of claim 11, wherein updating remaining lease times includes subtracting the length of time of the network disablement from the remaining lease times.

Claim 14 (Original): The method of claim 12, further comprising canceling one of the associations when the remaining lease time for the respective association is shorter than the length of time of the network disablement.

Claim 15 (Currently Amended): The method of claim 1, wherein detecting a network disablement includes:

sending periodic messages to communicate the state of the passive optical network interface; and

concluding that a network disablement has occurred when a response to the periodic messages is not received with a predetermined period of time.

Claim 16 (Original): The method of claim 1, wherein the address association information includes a network address and a remaining lease time.

Claim 17 (Currently Amended): The method of claim 1, wherein storing network address association information includes storing the network address association information in non-volatile memory of the network node.

Claim 18 (Original): The method of claim 1, wherein the network addresses include Internet Protocol (IP) addresses.

Claim 19 (Original): The method of claim 1, further comprising leasing the network addresses to clients for a specified duration of time.

Claim 20 (Currently Amended): A computer-readable storage medium comprising instructions to cause a processor, in a network node coupled to a passive optical network interface and to one or more network clients, to:

detect a disablement of the a passive optical network interface;  
store in a memory address association information indicating association of network addresses with the network clients upon detecting the disablement;  
retrieve from the memory the address association information upon recovery of the  
passive optical network interface from the disablement; and  
reestablish the association of associate the network addresses and the network clients based on the retrieved stored address association information ~~upon recovery from the~~  
~~disablement~~.

Claim 21 (Currently Amended): A method performed by a network node coupled to a  
passive optical network interface and to one or more network clients, the method comprising:  
retrieving from a memory stored address association information indicating association of network addresses with the network clients upon recovery of the a passive optical network interface from a disablement;  
reestablishing the association of associating the network addresses with to the network  
clients based on the retrieved stored address association information;  
sending ARP queries to the network clients for the network addresses indicated in the address association information; and  
maintaining the reestablished associations upon receiving ARP responses from the  
network clients for the network addresses.

Claim 22 (Original): The method of claim 21, wherein sending ARP queries for the network addresses indicated in the address association information includes periodically sending ARP queries for the network addresses for a period of time.

Claim 23 (Original): The method of claim 22, wherein the period of time includes a remaining lease time indicated for each of the network addresses in address association information.

Claim 24 (Original): The method of claim 21, further comprising:

    updating the address association information for at least one of the network addresses;  
and

    ceasing the ARP queries for network addresses that have association information that was updated.

Claim 25 (Original): The method of claim 21, further comprising canceling the association of a network address to a client upon expiration of a remaining lease time.

Claim 26 (Original): The method of claim 21, further comprising:

    detecting a lease modification message; and  
    updating the association information upon detecting a modification message.

Claim 27 (Original): The method of claim 26, wherein the lease modification message includes at least one of an acknowledge message indicating a new lease of one of the network addresses, a renewal message indicating a new lease time for a network address, and a client release message indicating that one of the clients has released one of the leased addresses.

Claim 28 (Currently Amended): A computer-readable storage medium comprising instructions to cause a processor, in a network node coupled to a passive optical network interface and to one or more network clients, to:

retrieve from a memory stored address association information indicating association of network addresses with the network clients upon recovery of the a passive optical network interface from a disablement;

reestablish the association of associate the network addresses with to the network clients based on the retrieved stored address association information;

send ARP queries to the network clients for the network addresses indicated in the address association information; and

maintain the reestablished associations upon receiving ARP responses from the network clients for the network addresses.

Claim 29 (Currently Amended): A method performed by a network node coupled to a passive optical network interface and to one or more network clients, the method comprising:

retrieving from a memory stored address association information indicating association of network addresses with the network clients upon recovery of the a passive optical network interface from a disablement;

determining a length of time of the disablement;

updating remaining lease times indicated by the address association information in accordance with the determined length of time of the network disablement; and

reestablishing the association of associating the network addresses with to the network clients in accordance with the updated address association information.

Claim 30 (Original): The method of claim 29, wherein determining the length of time of the network disablement includes:

setting a timestamp upon detecting the network disablement; and

comparing the timestamp with a timing device to determine the length of time of the network disablement.

Claim 31 (Original): The method of claim 29, wherein updating the remaining lease times includes subtracting the length of time of the network disablement from the remaining lease time.

Claim 32 (Original): The method of claim 29, further comprising canceling the association from the address association information when the remaining lease time is shorter than the length of time of the network disablement.

Claim 33 (Original): The method of claim 29, wherein the network addresses include Internet Protocol (IP) addresses.

Claim 34 (Currently Amended): The method of claim 29, further comprising:  
detecting a network disablement of a passive optical network; and  
storing the address association information upon detecting the a network disablement.

Claim 35 (Original): The method of claim 29, further comprising canceling the association of a network address to a client upon the remaining lease time expiring.

Claim 36 (Currently Amended): A computer-readable storage medium comprising instructions to cause a processor, in a network node coupled to a passive optical network interface and to one or more network clients, to:

retrieve from a memory stored address association information indicating association of network addresses with the network clients upon recovery of the a passive optical network interface from a disablement;

determine a length of time of the disablement;

update remaining lease times indicated by the address association information in accordance with the determined length of time of the disablement; and

reestablish the association of associating the network addresses to with the network clients based on the stored in accordance with the updated address association information;

send ARP queries for the network addresses indicated in the address association information; and

maintain the associations upon receiving ARP responses for the network addresses.

Claim 37 (Currently Amended): A passive optical network comprising:

a network node that represents at least one or more client network clients;

a passive optical network an interface that transmits information to the network node via an optical fiber link, wherein the network node is coupled to the passive optical network interface and to the one or more network clients; and

a non-volatile memory that stores a set of address association information associated with the network node that associates network addresses with to the one or more network clients represented by the network node upon recovery of the passive optical network interface from a disablement,

wherein the network node is configured to retrieve the stored address association information from the non-volatile memory upon recovery of the passive optical network interface from the disablement, and reestablish the association of the network addresses and the network clients based on the retrieved address association information.

Claim 38 (Currently Amended): The passive optical network of claim 37, wherein the network node stores the set of address association information in the a non-volatile memory upon detecting the passive optical network disablement.

Claim 39 (Original): The passive optical network of claim 37, wherein the address association information includes assigned network addresses and a remaining lease time of the assigned network address.

Claim 40 (Original): The passive optical network of claim 39, wherein the network node sends an ARP query the network addresses to the associated client for the duration of the remaining lease time indicated by the address association information.

Claim 41 (Original): The passive optical network of claim 37, further comprising a timing device.

Claim 42 (Original): The passive optical network of claim 41, wherein the network node compares a timestamp with a time indicated by the timing device to determine the length of time of the network disablement.

Claim 43 (Currently Amended): A passive optical network device comprising:

means for detecting a disablement of a passive optical network interface, wherein the passive optical network interface is coupled to a network node, and the network node is coupled to one or more network clients;

means for storing address association information indicating association of network addresses with the network clients upon detecting the disablement;

means for retrieving the stored address information upon recovery of the passive optical network interface from the disablement; and

means for reestablishing association of associating the network addresses and the network clients based on the retrieved stored address association information upon recovery from the disablement.

Claim 44 (Currently Amended): The device of claim 43, wherein associating the network addresses and the network clients includes:

~~means for retrieving the stored address association information; and~~

means for verifying whether the associations indicated by the address association information are valid.

Claim 45 (Original): The device of claim 44, wherein the means for verifying whether the associations are valid includes:

means for sending Address Resolution Protocol (ARP) queries for the network addresses indicated by the address association information; and

means for maintaining the address associations upon receiving ARP responses.

Claim 46 (Original): The device of claim 45, wherein the address association information includes a remaining lease time, wherein means for sending the ARP queries periodically sends the ARP queries for the remaining lease time for each of the address associations.

Claim 47 (Original): The device of claim 45, wherein the means for sending the ARP queries ceases the sending of the ARP queries for one of the network addresses upon detecting a change in the address association information for the respective network address.

Claim 48 (Original): The device of claim 45, further comprising means for canceling the address association for one of the network addresses when an ARP response is not received for the respective network address within a predetermined period of time.

Claim 49 (Original): The device of claim 45, further comprising means for sending the ARP query to a network client associated with the network address.

Claim 50 (Original): The device of claim 44, further comprising means for modifying the address association information upon detecting a lease of one of the network addresses.

Claim 51 (Original): The device of claim 44, further comprising means for modifying the address association information upon detecting a renewal of one of the network addresses.

Claim 52 (Original): The device of claim 44, further comprising means for canceling one of the address associations upon detecting that one of the clients has released the respective network address.

Claim 53 (Original): The device of claim 43, further comprising:

means for tracking a length of time of the network disablement; and  
means for updating remaining lease times of address association information in accordance with the length of time of the network disablement.

Claim 54 (Original): The device of claim 53, wherein the means for tracking the length of time of the network disablement sets a timestamp upon detecting the network disablement, and compares the timestamp with a time indicated by a timing device to determine the length of time of the network disablement.

Claim 55 (Original): The device of claim 43, wherein the address association information includes a network address and a remaining lease time.

Claim 56 (Original): The device of claim 43, wherein the network addresses include Internet Protocol (IP) addresses.

Claim 57 (New): The method of claim 1, wherein storing address association information comprises storing the address association information within a memory associated with the network node coupled to the network clients.

Claim 58 (New): The method of claim 1, wherein detecting a disablement of a passive optical network interface comprises detecting a network disablement in which the passive optical network loses state information indicating association of the network addresses to the network clients.

Claim 59 (New): The method of claim 1, further comprising performing the storing, retrieving and reestablishing with substantially no manual intervention.

Claim 60 (New): The method of claim 21, wherein retrieving stored address association information comprises retrieving the stored address association information from a memory associated with the network node coupled to the network clients.

Claim 61 (New): The method of claim 21, further comprising performing the retrieving and reestablishing with substantially no manual intervention.

Claim 62 (New): The method of claim 29, wherein retrieving stored address association information comprises retrieving the stored address association information from a memory associated with the network node coupled to the network clients.

Claim 63 (New): The method of claim 29, further comprising performing the retrieving and reestablishing with substantially no manual intervention.

Claim 64 (New): The device of claim 43, wherein the means for detecting a disablement of a passive optical network detects a network disablement in which the passive optical network loses state information indicating association of the network addresses to the network clients.

Claim 65 (New): The device of claim 43, wherein the means for retrieving and the means for reestablishing operate to perform the retrieving and reestablishing with substantially no manual intervention.